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Minutes of the meeting about a possible upgrade of the ECool FSM

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1. FSM is an important tool for ECool operation, and presently running well. However, it would be useful to upgrade it in two directions:
    a. Make it friendlier for operators, so that its status would be easily visible. The discussed possibility is to permanently display on one of RR – assigned consoles a box with three placeholders:
        i.   Status. Always displayed. Either green (no action required), yellow (operator's attention is required), or red (operator's action is required). Examples: "Normal", "Full discharge".
        ii. Parameter of concern and its value. Displayed only if Status is not green. Example: "Acceleration side vacuum R:IGA06 = 2.3E-07. Should be < R:PARM09 = 4.0E-09."
        iii. Instruction. Displayed only if Status is not green. Example: "Run the E48 aggregate 'Recover from full discharge' and then 'Turn ebeam on for ecooling'. "
    b. Start adding to the FSM a capability to deal with infrequent trouble situations, which can be comparatively easily identified but presently are being forgotten how to deal with in the time between occurrences. It can be done by
        i. By creating an additional status and a capability for the program to identify it
        ii. By either an instruction to operators or adding a piece of code that does what otherwise the instruction says.
2. Linden thinks that (1a) is doable and will start working with that. Mary and Sasha will prepare a list of states, parameters, and instructions.
3. The general strategy for (1b) will be to make the additions mostly by users.
    a. Linden will teach Marty and Mary how to edit FSM.
    b. Arden is ready to help in the transition but would prefer to do not take a lead because of a heavy load with his other projects
    c. Marty will think whether somebody else from Operation would be interested to participate.
4. The first addition will be to deal with high and persistent corona current events.
5. The next step could be dealing with cases when the beam trips as soon as FSM attempts to restore the recirculation. For that, we will need to be able calculating the time between interruptions.